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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09 771,673	01 29 2001	Hessel Sprey	NEDER23.001CPI	8115

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KNOBBE MARTENS OLSON & BEAR LLP  
2040 MAIN STREET  
FOURTEENTH FLOOR  
IRVINE, CA 92614

EXAMINER

MACARTHUR, SYLVIA

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 05 29 2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/771,673

Applicant(s)

SPREY ET AL.

Examiner

Sylvia R MacArthur

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1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133)
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on 10 March 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☐ Claim(s) 11-24 is/are pending in the application.
- 4a) Of the above claim(s) 11-14 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 15-24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on 29 January 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.

1) ☐ Notice of Preliminary Action (PTO-948)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other \_\_\_\_\_

*Election/Restrictions*

1. Applicant's election without traverse of claims 15-24 in Paper No. 9 is acknowledged.

*Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 15, 17, 18, and 20-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tohru et al (EPO 0335313) in view of Mayer (US 6,333,275).

Tohru teaches a method and apparatus for manufacturing a semiconductor device. Tohru discusses an etching chamber (quartz tube 10), discharging chamber 14 (auxiliary chamber). Etchant 14A and catalyst 14B are introduced into the etching chamber via the auxiliary chamber positioned within a first path (17). Etchant 10A and catalyst 10B are positioned within a second path. A plurality of shut-off valves is shown along the pipelines in Fig.1. The lines to the etching chamber are flushed via the auxiliary chamber.

Note the open/closed state of the shut-off valves is a matter of intended use, which does not merit patentable weight.

Mayer teaches a plurality of feeds N<sub>2</sub>, DI water, H<sub>2</sub>SO<sub>4</sub>, and etchants (elements 252 and 258) and their respective sources. Mayer cites the motivation for separate feeds in the abstract. Therein it is explained that providing separate feeds to the etching chamber ensures that the feeds will enter the chamber at the appropriate concentration by mixing the feeds immediately prior to use rather than in the piping systems, see Fig. 2A. Thus, it would have been obvious for one of ordinary skill in the art at the time of the claimed invention to modify the apparatus of Tohru to include a plurality of feeds and their respective sources to separately provide fluids to the etching chamber. Valves are provided and illustrated as elements 232, 238, 248, 254, and 260.

Regarding claim 17, the etching chamber of Tohru is exhausted using exhaust pump 12.

Regarding claim 20, Tohru fails to teach that the etching chamber comprises polyvinylidene fluoride (PVDF). Nevertheless, PVDF is a well known material of construction in harsh chemical environments such as that of an etching chamber.

Mayer teaches the advantages of utilizing such plastics as PVDF as a material of construction in harsh corrosive environments. In col. 12 lines 4-13, Mayer discusses the motivation to utilize plastics such as PVDF. Therein it is discussed that PVDF is resist to chemical attack and has sufficient mechanical strength (without creep or flow) to maintain necessary stringent mechanical tolerances. Thus, it would have been obvious for one of ordinary skill in the art at the time of the claimed invention to construction the piping system of Tohru with PVDF for the advantages that Mayer suggests.

Regarding, the specific etching gases as cited in claims 21-24 of the claimed invention, the prior art does not teach an intended use such that the apparatus resulting from the combined

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teachings of Tohru and Mayer are capable of providing such gases. Water (a catalyst for HF etching) is discussed by Mayer see Fig. 2A.

Thus, it would have been obvious for one of ordinary skill in the art at the time of the claimed invention to provide the cited types of gases in the apparatus of Tohru modified by Mayer.

4. Claims 15, 16, and 18-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Izumi et al (USP 5,022,961) in view of Mayer (US 6,333,275).

Izumi teaches a method of etching a film comprising HF and an alcohol as etchants and nitrogen as the catalyst. The bubbler illustrated in Fig. 1 is the auxiliary chamber. The reaction chamber is illustrated therein as element 12. Izumi teaches how the etching chamber is flushed in col. 8 line 66 – col. 9 line 5 and in col. 13 lines 8-15. Izumi further teaches that the etching chamber 12 is formed with Teflon as it has particularly excellent characteristics in resistance to HF. The open/closed state of the shut-off valves is a matter of intended use, which does not merit patentable weight.

Regarding claims 15 and 18, Izumi fails to teach first and second fluids feeds, which separately provide gases to the etching chamber.

Mayer teaches a plurality of feeds N<sub>2</sub>, DI water, H<sub>2</sub>SO<sub>4</sub>, and etchants (elements 252 and 258) and their respective sources. Mayer cites the motivation for separate feeds in the abstract. Therein it is explained that providing separate feeds to the etching chamber ensures that the feeds will enter the chamber at the appropriate concentration by mixing the feeds immediately prior to use rather than in the piping systems, see Fig. 2A. Valves are provided and illustrated as

in the art at the time of the claimed invention to modify the apparatus of Izumi to include a plurality of feeds and their respective sources to separately provide fluids to the etching chamber.

Regarding claim 16, a plurality of (shut-off) valves is illustrated as well as bypass line 18. Note when the valve of line 26 is shut off the auxiliary chamber is by-passed

Regarding claim 20, Izumi fails to teach that the etching chamber comprises polyvinylidene fluoride (PVDF). Nevertheless, PVDF is a well known material of construction in harsh chemical environments such as that of an etching chamber.

Mayer teaches the advantages utilizing such plastics as PVDF as a material of construction in harsh corrosive environments. In col. 12 lines 4-13, Izumi discusses the motivation to utilize plastics such as PVDF. Therein it is discussed that PVDF is resist to chemical attack and has sufficient mechanical strength (without creep or flow) to maintain necessary stringent mechanical tolerances.

Thus, it would have been obvious for one of ordinary skill in the art at time of the claimed invention to utilize PVDF as the material of construction for the etching chamber.

Thus, it would have been obvious for one of ordinary skill in the art at the time of the claimed invention to construction the piping system of Izumi with PVDF for the advantages that Mayer suggests.

Regarding, the specific etching gases as cited in claims 21-24 of the claimed invention, the gases listed are an intended use such that the apparatus resulting from the combined teachings of Izumi and Mayer are capable of providing such gases. Furthermore, HF is cited as

10. In the abstract Water (a catalyst for HF etching) is discussed by Mayer

Thus, it would have been obvious for one of ordinary skill in the art at the time of the claimed invention to provide the cited types of gases in the apparatus of Izumi modified by Mayer.

***Response to Arguments***

5. Applicant's arguments with respect to claims 15-20 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

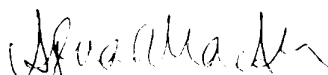
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7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sylvia R MacArthur whose telephone number is 703-306-5690. The examiner can normally be reached on M-F during the core hours of 8 a.m. and 2 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory L. Mills can be reached on 703-308-1633. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

  
Sylvia R. MacArthur  
May 27, 2003

  
GREGORY MILLS  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 1700